Demonstration of Integrated Optimization Software at the Baldwin Energy Complex

Participant
NeuCo, Inc.

Additional Team Members
Dynegy Midwest Generation—host

Location
Baldwin, Randolph County, Illinois (Dynegy Midwest Generation's Baldwin Energy Complex)

Technology
Advanced optimization software, building on NeuCo's ProcessLink™ technology

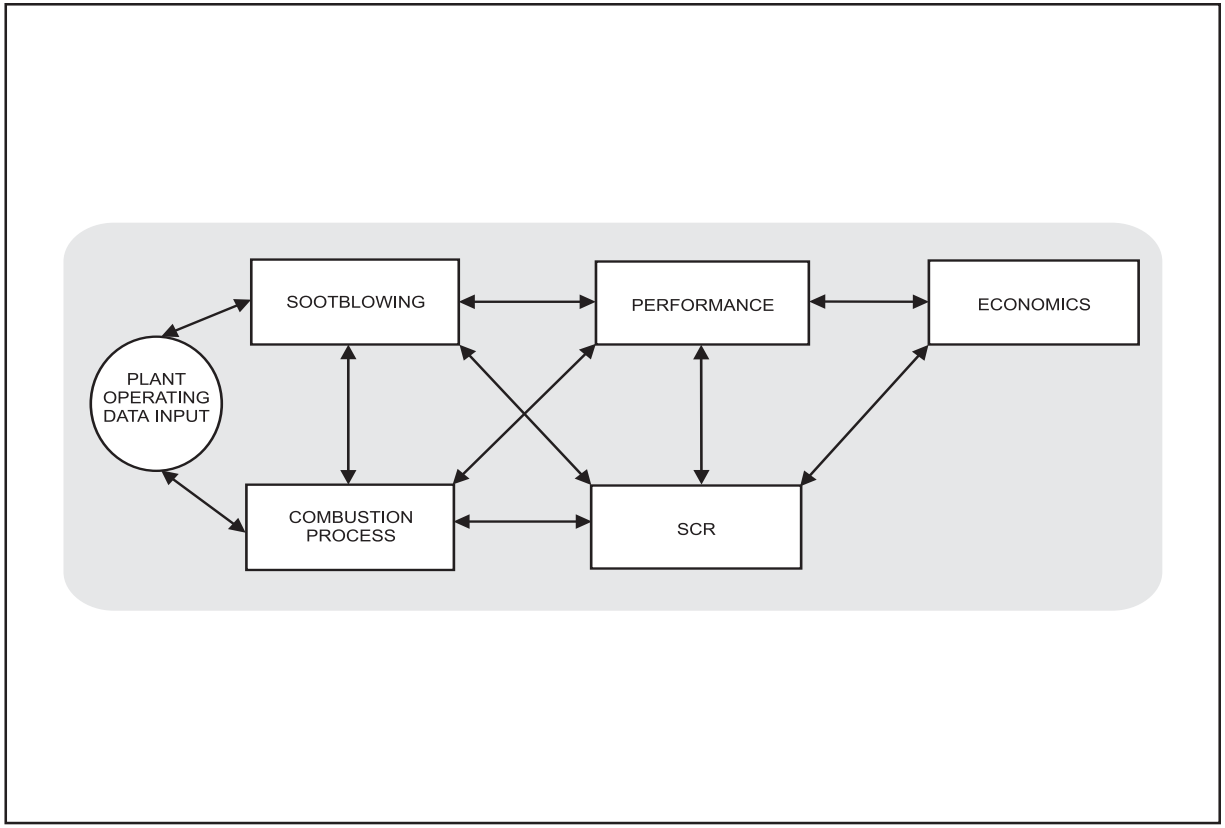
Project Capacity/Production
1,768 MW

Coal
Powder River Basin

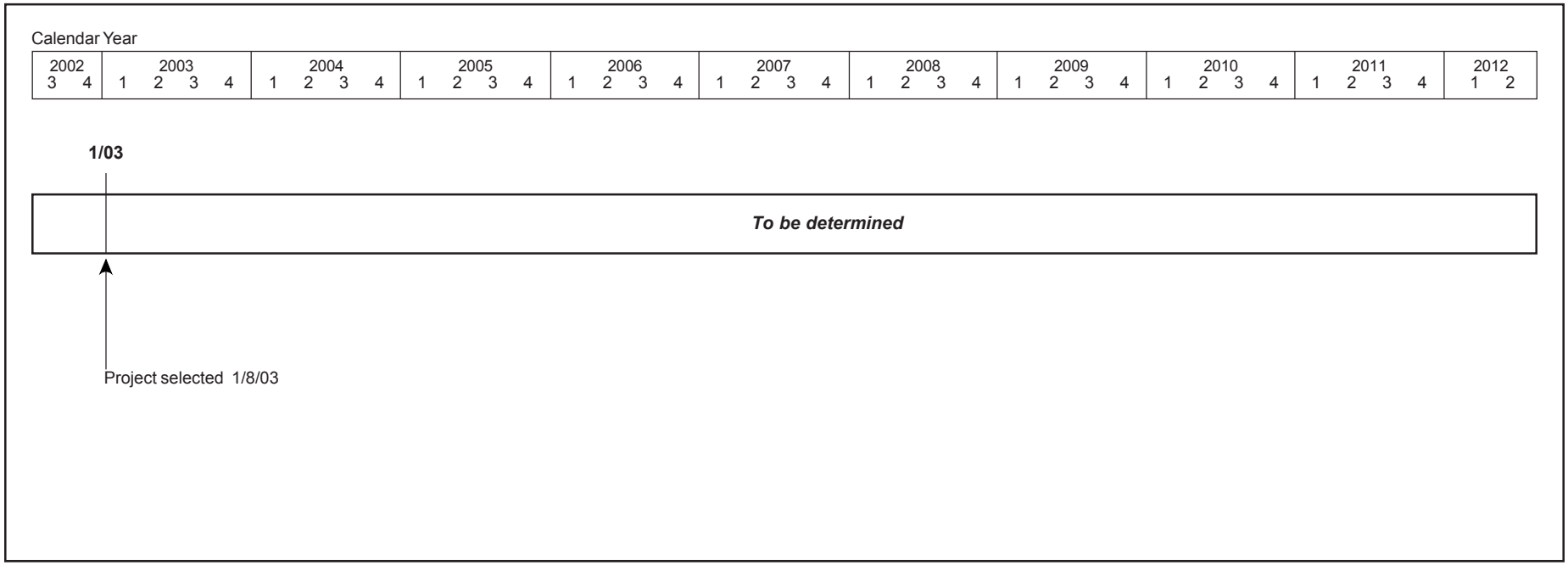
Project Funding

Total	$18,640,231	100%
DOE Share	$ 8,388,104	45
Participant	$10,252,127	55

Project Objective
To design, develop, and demonstrate integrated on-line optimization systems that will address combustion, soot-blowing, selective catalytic reduction (SCR) operations, overall unit thermal performance, and plant-wide profit optimization in order to reduce nitrogen oxides (NO_x) by 5%, increase efficiency by 1.5%, and improve reliability and availability to boost production by 1.5%.



Technology/Project Description
The ProcessLink™ technology platform includes neural networks, genetic algorithms, and fuzzy logic techniques from which to comprehensively apply optimization techniques to a variety of systems within coal power plants through existing control technologies and then link these systems to each other. It also supports the development of integrative optimization solutions, which use system-specific optimization applications as data sources and actuators.



Project Status/Accomplishments

The project was selected for award on January 8, 2003. Negotiations are underway and a cooperative agreement is expected by mid- to late-2003. The project duration is expected to be four years.

The increases in fuel efficiency (heat rate reduction) will also provide commensurate reductions in greenhouse gases, mercury, and particulates. These solutions will build on NeuCo's ProcessLink™ technology platform. The proposed work will demonstrate closed-loop combustion optimization for cyclone boilers and integrate the newly developed solutions with combustion optimization at all three of the plant's nominal 600-MW coal-fired units (two cyclone-fired units with selective catalytic reduction and one tangentially fired unit with low-NO_x burners).

Commercial Applications

When completed, this project will demonstrate the applicability of integrating an on-line optimization system with power plant operations to increase the thermal efficiency of the plant, hence reducing emissions of CO_2, increasing fuel efficiency, and increasing overall reliability while achieving a corresponding reduction of airborne emissions. The increases in fuel efficiency will also provide commensurate reductions in mercury and particulates. As plant complexity increases through retrofit and repowering applications, the introduction of new technologies, and plant modifications, this integrated process optimization approach can be an important tool that supports a plant operator's control objectives and links them to corporate objectives of increased efficiency and lower emissions.